United States Department of the Interior

FISH AND WILDLIFE SERVICE

Delaware Bay Estuary Project
2610 Whitehall Neck Road
Smyrna, DE 19977

In Reply Refer To:
FWS/Region5/ES/DBEP

Thomas Street, Attorney Advisor
NOAA Office of General Counsel for Ocean Services
1305 East-West Highway, Room 6111
Silver Spring, MD 20910

Dear Mr. Street:

This letter provides U.S. Fish and Wildlife Service (Service) comments regarding the Federal Consistency Appeal by G. Walter Swain, which was published in the Federal Register on February 26, 2008, Vol. 73, No. 43, pages 11620-11621 (FR Doc. 08-917). We realize that these comments are being provided after the comment period closed; however, the comment period (May 1-30, 2008) was open only during the time shorebirds are in Delaware Bay and critical field work precluded coordinating and drafting the comments in a timely manner. As we discussed over the telephone in late May, NOAA agreed to accept agency comments after the public comment period. These comments have substantial bearing on this appeal and we ask that they be considered in the deliberations on this matter.

The following comments represent a coordinated response from all Service offices working on red knot and shorebird issues within Delaware Bay. The programs represented are the Service's Endangered Species, Migratory Bird, and Coastal Programs offices.

AUTHORITY

In 2006, the Service designated the red knot as a candidate species for Federal listing under the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq*.). Candidate species are those species for which the Service has determined that listing under the ESA is warranted, but listing the species immediately is currently precluded by higher priority listing actions. While candidate species status does not

currently provide the red knot regulatory protection under the ESA, once listed, the species will be afforded full protection under the Act. Therefore, to avoid the need to re-evaluate the project following Federal listing, the Service encourages all federal agencies to address impacts to candidate species during project planning and review.

The following comments are also provided pursuant to the Migratory Bird Treaty Act of 1918 (40 Stat. 755, as amended; 16 U.S.C. 703-712).

BACKGROUND INFORMATION

The red knot population has declined by nearly 75% from 1985 to 2007 and by an additional 15% in the past year (2007 to 2008). The habitat at Delaware Bay, and particularly in Mispillion Harbor plays a crucial role in the persistence of the red knot. A large proportion of migrating red knots use the Delaware Bay as a staging area on their northward migration in the spring. The abundance and availability of horseshoe crab eggs in the intertidal foraging habitat used by red knots in Delaware Bay are key to red knots building fat reserves considered crucial for sustaining migration from the Delaware Bay to Arctic breeding grounds and for survival and successful reproduction. During migration, red knots undertake long flights that may span thousands of kilometers without stopping. During the spring migration, red knots stop over for a period of approximately two to three weeks along the Atlantic coast of the United States to rebuild energy reserves needed to complete the journey to the Arctic and arrive on the breeding grounds in good condition (Harrington 1996). Historically, the Delaware Bay region of Delaware and New Jersey has supported the largest known spring migration concentration of red knots and is the last major stopover area used by red knots migrating to Arctic breeding areas (Harrington 1996).

Harrington (1996) stated that no single stopover area is more important for the red knot than the Delaware Bay because the nutritive yield of the Bay is so high. Although a single horseshoe crab egg contains an insignificant amount of energy, Harrington (1996) found that eggs "cover the beach in such astronomical profusion that the bird can eat enough in a mere two weeks to double its weight" and estimated that an individual red knot would consume almost 135,000 eggs during the Delaware Bay stopover. In a more recent study Haramis et al. (2007) found that red knots in captive feeding trials consumed up to 24,000 horseshoe crab eggs per day. Although the birds were released before completing mass gain, it was projected that the birds would have increased egg consumption to achieve a weight gain of 6+ g per day as they approached a 180 + g condition. Red knots require approximately 5,000 horseshoe crab eggs per gram of body mass gained (Haramis et al. 2007). Therefore, near the end of the stopover period, red knots need to consume approximately 30,000 or more horseshoe crab eggs per day to achieve a 6+ g per day weight gain.

This approximate doubling of mass, from arrival at 90 to 120 gm to departure at 180 to 220 gm, is achieved annually if conditions are favorable (Baker et al. 2001; Baker et al. 2004). Individual red knots can store fat and protein at two to three times the annual average rate when horseshoe crab eggs are superabundant. Consequently, even late-

arriving migrants should be able to reach these departure masses during their short stay. Research results indicate this weight gain is crucial to sustain the birds on their nonstop flight from the Delaware Bay, and for survival and successful reproduction on arctic breeding grounds (Baker et al. 2004) A female red knot radio-tagged in May 1999 in Delaware Bay and recaptured incubating 4 eggs on the nest 6 weeks later in Canada had used up 60 g of reserves, demonstrating the importance of large scale weight gain during the stopover (Baker et al. 2001).

While management actions by the ASMFC have reduced harvest and will work toward increasing availability of horseshoe crab eggs for migrating shorebirds in the long-term, significant benefits of these management actions will not be realized immediately. The horseshoe crab is relatively long-lived and slow to mature, reaching breeding age at about 10 years of age; thus there would likely be at least a 10-year lag time between fishery restrictions and the full effect of changes in horseshoe crab populations (ASMFC 2004).

Human disturbance can have an adverse effect on foraging by shorebirds at available suitable habitats. The severity of the impact depends on the degree of disturbance and the availability of other suitable feeding areas. Disturbance compels birds to pay the energetic cost of flying to a new area; it may reduce the amount of time that the birds are able to feed, and can prevent them from feeding in the most preferred sites. Management that restricts human activities on Delaware Bay beaches has been shown to be effective in creating disturbance-free beaches necessary for feeding and resting shorebirds. (Niles et al. 2007).

Disturbance by people is not limited to direct use of Delaware Bay beaches. Low energy beaches, particularly those along the mouths of tidal creeks and rivers, have been identified as optimum horseshoe crab spawning habitat. Where these areas have high levels of boat traffic, such as at Mispillion Harbor in Delaware, disturbance due to the presence, noise, speed, or wake of boats is likely to be considerable (Niles et al. 2007). Preliminary results indicate that boat traffic in Mispillion Harbor represents a significant source of disturbance to feeding shorebirds, particularly when boats travel at high speed. Mispillion Harbor consistently supports high concentrations of red knots, sometimes more than 20% of the entire Delaware Bay population (Niles et al. 2007).

Observations by biologists attempting to capture shorebirds for research and monitoring in Mispillion Harbor have reported that dogs walking along the shoreline across Cedar Creek and the Mispillion River have disturbed the shorebirds causing them to leave the areas within line of sight of the dog (Carter, personal communication). Work by Harrington (in preparation) on current levels of disturbance to shorebirds suggests that disturbance has the potential to impair the ability of red knots to reach target weights, particularly in years when weather conditions reduce egg abundance. Burger et al. (2004) found that shorebirds flew away and did not return to forage in response to 58% or more human disruptions. Work by Burger has shown that red knots leave earlier than other shorebirds when disturbance occurs, and return later after the disturbance is over, reducing their ability to compete for food resources that may be limited.

In addition, boats traveling at high rates of speed, moving close to shore, and creating large wakes have disturbed birds and caused them to lift off and move away from the catch area. In addition, people standing up in boats, making noise while on a boat, and talking loudly have disturbed birds that are foraging causing them to take flight. Finally it is commonly seen that when boat engines are started shorebirds are disturbed and take flight (personal observations).

In summary, studies have shown that human disturbance causes a substantial disruption to foraging and resting red knots. When coupled with diminished prey resources and reduced habitat availability, such human disturbance displaces red knots from optimal foraging sites to areas that may be less suitable. Therefore, the available information suggests that human disturbance occurring during critical migration periods can result in a negative impact and, while not the primary cause, may be a contributing factor to reduced fitness of red knots.

SERVICE COMMENTS

In recent years, Mispillion Harbor has served as the prime foraging areas for red knot during their critical spring migration stopover, harboring 20% or more of the total population within the Delaware Bay at a time. During periods when horseshoe crab eggs are suppressed on Delaware Bay coastal beaches, such as occurs following coastal storm events, the importance of Mispillion Harbor as a sheltered horseshoe crab spawning and red knot foraging area increases substantially.

The proposed marina will be located 75-150 meters from this primary feeding and resting area for red knot and other shorebirds in Mispillion Harbor. Because of this location, directly within line of sight of foraging and roosting birds and within an audible distance, the level of disturbance is likely to increase significantly, negatively affecting the birds ability to gain sufficient weight for sustained survival and successful reproduction. The pattern of boat movements will change and will add new types of disturbance (boat engines starting up and maneuvering around the marina) for shorebirds feeding and resting in the harbor. The number of pedestrians and vehicle traffic at the marina will increase over current levels, as will the presence of people standing in boats, loud sounds, and additionally presence of dogs will likely increase. It is reasonable to expect that there will also be more human activity of people using and working on their boats while they are docked at the marina. There is also potential for more oil, gasoline and other compounds to be spilled in this area, increasing pollution, with uncertain effects on the quality of the habitat for horseshoe crabs and birds. These changes will likely increase the frequency of disturbance events in Mispillion Harbor.

While it is difficult to quantify how much more disturbances will occur, and then extrapolate that to reduced foraging time available to shorebirds, it seems likely that shorebird foraging will be negatively impacted to a significant degree. The current population of red knots is at a record low and continues to experience a declining trend, prompting designation of the species as candidate for listing under the ESA. Mispillion Harbor appears to be singularly important to shorebirds as a foraging area with two

orders of magnitude more eggs than other locations in Delaware Bay. Risk averse conservative management of this critical foraging area for red knot and other shorebirds is called for until egg abundance in other locations in Delaware Bay show significant increases and the red knot population shows an upward trend. Therefore, the Service concurs with the State of Delaware's finding that the project does not meet the intent of the Coastal Zone Management Act of 1972 (P.L. 92-583) (86 Stat. 1280; 16 U.S.C. 1451-1464).

Thank you for the opportunity to comment on this Appeal. This has also been sent via email. If you have any questions or need further information please contact me at (302) 653-9152 or gregory_breese@fws.gov.

Sincerely,

Gregory A. Breese, Project Leader
Delaware Bay Estuary Project

cc: R5, ES
R5, Migratory Birds
CBFO
NJFO
DE DNREC, Fish & Wildlife
DE DNREC, Coastal Management Program

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